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PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements relating to Refrigerators.

We, MORRIS HEATING APPLIANCES, LIMITED, of 59/61, New Oxford Street, London, W.C.1, a British Company, and ARTHUR ALEXANDER MERCER, of 64, Sinclair Road, West Kensington, London, S.W., a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to refrigerators of the kind comprising a container impervious to moisture provided on the outside with a layer of porous material from the surface of which liquid, usually water, is allowed to evaporate into the atmosphere to maintain the contents of the container cool. Hitherto in containers of this kind, the porous material has been in the form of separately preformed slabs or tiles of an earthenware nature held in place against the sides of the container as, for example, by means of ledges or frames.

According to the invention, the porous material is brought into close contact with the wall of the container either as a result of being cast on to the container or cemented to it by means of a cement that, when dry, will be similar to the layer of porous material itself. It is found that more efficient cooling is obtained as a result. The material may be cast directly on to the unprepared surface of the container, especially if it is of metal as it may be. It may, however, be of glass, especially in the case of a refrigerator intended for storing articles of food, and then it is preferable to roughen the surface of the glass, as by sand-blasting before casting or cementing on the porous material. It is preferred to provide the outer surface of the layer of porous material with integral ribs so as to increase the surface available for the evaporation of the liquid. The material may conveniently consist of a mixture of washed coke breeze dust and Portland cement. The invention may also include further features which will be hereinafter referred to and claimed.

In order that the invention may be

clearly understood and readily carried into effect, it will now be more fully described by way of example with reference to the accompanying drawings, in which:—

Figure 1 is a perspective view of one form of refrigerating box with lid constructed in accordance with it.

Figure 2 is a diagrammatic sectional elevation of another form of refrigerator.

The refrigerating box illustrated in Figure 1 of the drawing is intended for use in storing and keeping cool comparatively small articles of food and takes the form of an open-topped container 1 having a cover 2. The cover merely rests in place on top of the container 1. The container 1 is covered on the four sides and the bottom with a layer of porous material 3. The cover likewise has a layer 4 of the same material. The material 3 covering the four sides and the bottom is in one piece. It is provided with integral vertical ribs 5 for increasing the surface available for evaporation. The material 3 is cast on to the container 1. This is done by placing the container open top downwards on a bench and placing over it an open-ended mould of appropriately larger internal dimensions. The material is then run into the mould to a sufficient depth to cover the bottom of the container to the desired thickness and left to set. We have found that a suitable material consists of a mixture of 6 parts of washed coke breeze dust and 1 part of Portland cement. This mixture is damped slightly and then put into the mould. It should be left for two days before the mould is taken off. As already explained, if the container is of glass, it is desirable to sand-blast it before casting on the material. It is also found to be advisable to fasten strands of wire round the walls of the inner container 1 to provide a means of securing the set material to the container and to reinforce it.

The cover 2 is provided with material 4 in a similar fashion. In this case the mould consists of a suitably formed depression which is filled with the material, the cover 2 being then

placed upon it and means being provided for the squeezing out of any excess material. The cover has a central depression or basin 6 into which can be poured
 5 a supply of liquid for impregnating the material 4 of the lid. Channels 7 radiate from the depression or basin 6 to points above the tops of the ribs 5 in the material 3, the channels being such that water
 10 will flow at a restricted rate from the depression 6 to the tops of the ribs and so keep the material 3 moist.

Figure 2 illustrates diagrammatically a larger type of refrigerator. In this case
 15 the opening through which the articles are inserted and removed is on one side of the covered container, the layer of material 3 covering the top, three sides, and the bottom. The open side abuts
 20 against the side of a surrounding casing or cabinet 8 which has an opening of the same size as the opening in the side of the container to give access to its interior, this opening being provided with doors.
 25 The other three sides, the top and bottom of the container are spaced from the sides of the cabinet, which may be of sheet metal, which is provided with holes allowing inlet of air at the bottom, and
 30 other holes for exit of air at the top so as to promote passage of air over the covered surfaces of the container. This action could be accelerated by providing an electrically-driven fan to produce the
 35 flow of air. Although not shown in the drawings, the surfaces of the material covering the container 1 could be ribbed as in the refrigerator of Figure 1. A depression 6 and channels 7 could also
 40 be provided in the material on the top of this container, but it is preferred to provide the porous material with integral upstanding extensions 9 so as to form a receptacle for a comparatively large
 45 quantity of water which is poured into it through an opening in the top of the cabinet. This is done because a container of this larger type would require a considerable amount of water to impregnate
 50 the porous material forming the covering, and if a small depression or none were provided, it would be necessary to pour in the water in a series of small instalments. With the arrangement described, how-
 55 ever, the large quantity of water that is necessary can be poured in at one time and merely left to make its way through the body of the porous material. This is of particular advantage when the container
 60 has been left for some time and allowed to become quite dry. A tray 10 is arranged beneath the container to catch any liquid that may drop from it, and the porous material on the bottom of the
 65 container has an integral downward

extension at 11 which projects into the tray so that water collecting in it will first make contact over only a small area of the porous material and thus tend to be re-absorbed.

It is to be understood that the refrigerators described with reference to the drawings are by way of example only; their construction may be varied without departing from the scope of the invention. For example, the material 3 could be pre-cast and subsequently cemented to the exterior of the container 1 by means of a cement which, when dry, would be of a porous nature similar to the material 3 so as virtually to form part of it. The same applies to the cover. The sides and bottom of the container need not be integral as shown, nor need the layers of porous material on the sides and bottom. In fact the sides of the container could be separable and arranged so that they could be readily taken apart and re-assembled to facilitate transport. In that case each separate side would be provided with its separate cast-on or cemented-on layer of porous material.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A refrigerator comprising a container provided on the outside with a layer of porous material wherein the
 100 porous material is cast on to the surface of the container or is cemented to it by means of a cement that is porous when dry.

2. A refrigerator according to Claim 1,
 105 wherein all the sides of said container except the open side through which articles are inserted or removed are surrounded by an integral cast-on or cemented-on shell of the porous material.

3. A refrigerator according to Claim 1 or Claim 2, wherein the outer surface of the porous material which is cast or cemented on to the sides is provided with integral ribs so as to increase the surface
 115 available for evaporation while the top surface of porous material is provided with a depression for receiving a supply of the liquid, and said top surface is provided with channels for leading liquid
 120 from said depression to the upper ends of the ribs on the sides.

4. A refrigerator according to any one of the preceding Claims and provided with a tray for catching the liquid fall-
 125 ing from the porous material; the porous material on the bottom being provided with an integral downward extension for the purpose described.

5. A refrigerator constructed and 130

arranged substantially as hereinbefore described with reference to Figure 1 of the accompanying drawings.

5 6. A refrigerator constructed and arranged substantially as hereinbefore described with reference to Figure 2 of the accompanying drawings.

7. A refrigerator according to any one

of the preceding Claims, wherein said container is of glass.

Dated this 28th day of March, 1934.

For the Applicants,

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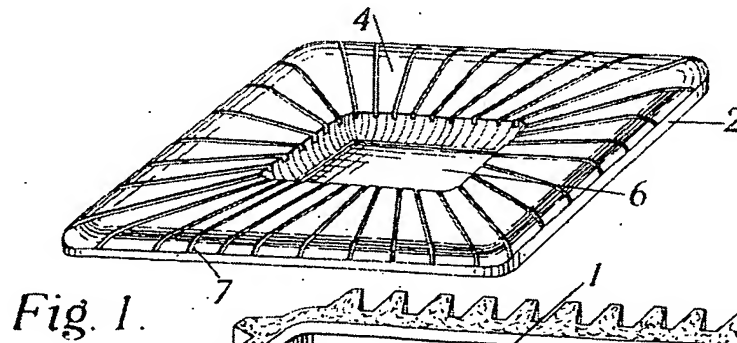


Fig. 1.

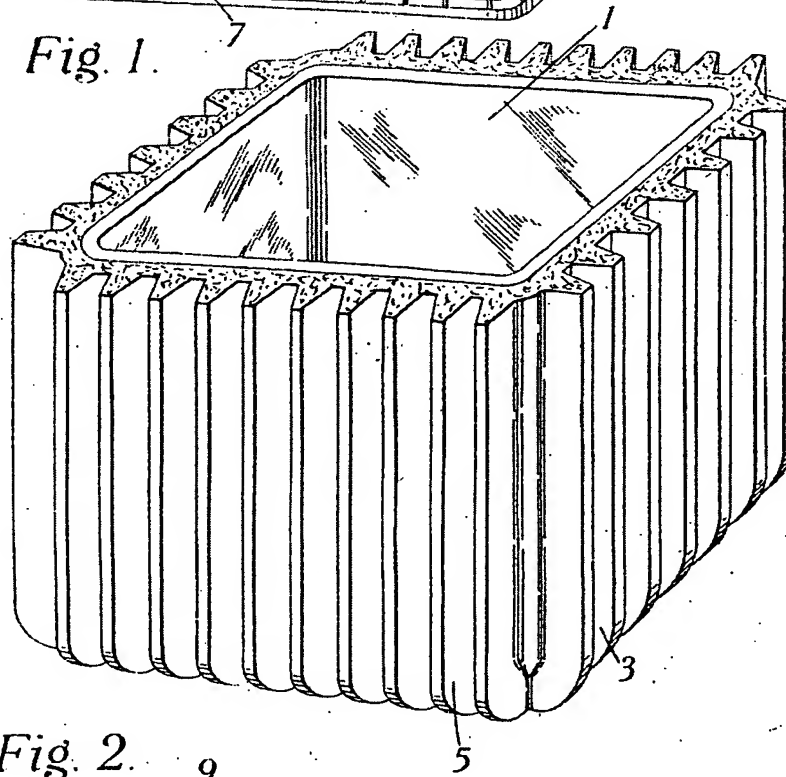
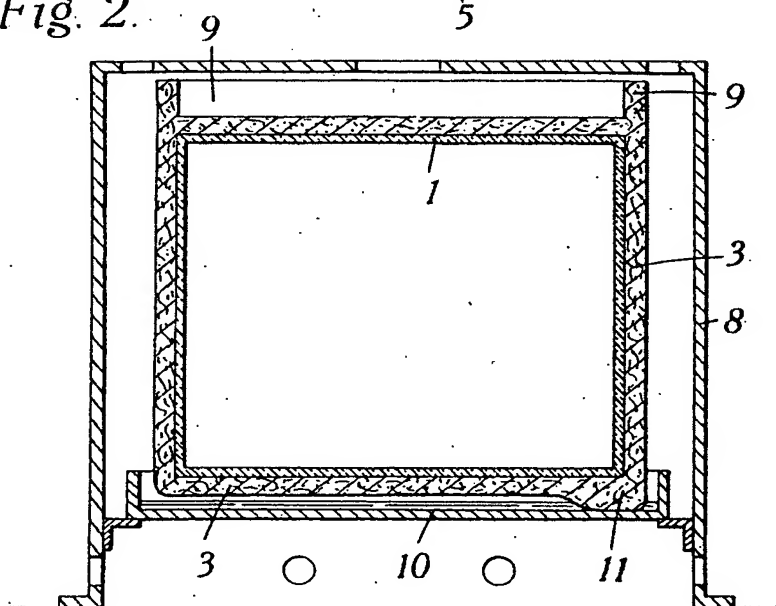


Fig. 2.



[This Drawing is a reproduction of the Original on a reduced scale.]

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